AMENDMENTS TO THE CLAIMS

1. (currently amended) A quality control method for ~~determining degree of~~ achieving complete deprotection of protected reactive groups in ~~manufacturing~~ on-chip synthesis of a biopolymer array, the method comprising

(a) synthesizing a plurality of different biopolymer species on an array from monomeric or oligomeric building blocks comprising detectable protecting groups coupled directly to ~~the building blocks, wherein at least some of the detectable protecting groups couple directly to~~ amino groups of the nucleotide building blocks and the detectable protecting groups remain coupled until synthesis ~~is terminated~~ of the biopolymer array,

(b) ~~after synthesis is terminated, achieving a degree of deprotection by~~ taking one or more steps to cleave the detectable protecting groups,

(c) ~~carrying out a determination of a~~ determining a degree of deprotection by detecting any detectable protecting groups remaining on the array after cleavage, and

(d) repeating steps (b) and (c) ~~if detectable protecting groups are detected~~ until detectable protecting groups are no longer detected, indicating that complete deprotection is achieved,

wherein the quality control method is performed ~~on the array~~ entirely on-chip.

2. (original) The method of claim 1, wherein the detectable protecting groups are fluorescent groups.

3. (original) The method of claim 2, wherein the fluorescent groups are selected from the group consisting of compounds comprising pyrene, dansyl, stilbene, rhodamine, or coumarin.

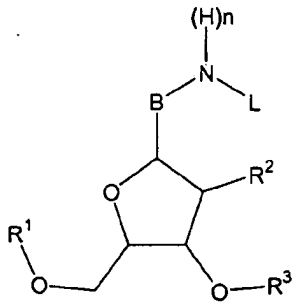
4-11 (canceled)

12. (original) The method of claim 1, wherein the biopolymer species are selected from the group consisting of nucleic acids, nucleic acid analogs, peptides, and peptide analogs.

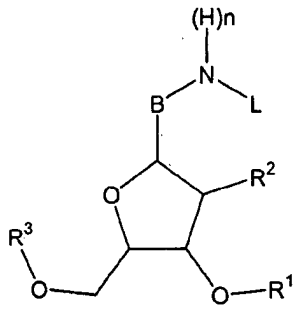
13. (currently amended) The method of claim 1, wherein the biopolymer species are selected from the group consisting of nucleic acids and nucleic acid analogs and wherein the detectable protecting groups are coupled to nucleobases through an amino group.

14. (canceled)

15. (previously presented) The method of claim 1, wherein the building blocks for the biopolymer synthesis are monomeric nucleotide building blocks having the general structural formulae (I) or (II):



I



II

wherein R^1 is an hydroxy protecting group,
R^2 is -H, -(C_1-C_{10})-alkoxy, -(C_2-C_{10})-alkenyloxy, -(C_2-C_{10})-alkynyloxy, -halogen, -azido, -NHR^7, -SR^7 or -OR^7, wherein R^7 is a protecting group or a reporter group,
R^3 is a phosphate, an H-phosphonate or other phosphate analog group which may contain a protecting group,
B is a nucleobase or a nucleobase analog,
n is 0 or 1, and
L is a detectable protecting group.

16. (original) The method of claim 15, wherein R^1 is selected from the group consisting of substituted triphenylmethyl groups, pixyl groups, photocleavable groups, and substituted silyl protecting groups.

17. (original) The method of claim 15, wherein R^1 is selected from the group consisting of 4,4'-dimethoxy triphenylmethyl compounds, 4-monomethoxy triphenyl compounds, p-nitrophenylpropoxy carbonyl (NPPOC), (α-methyl)-6-nitropiperonyloxy carbonyl (MeNPOC), *tert*-butyldimethyl silyl (TBDMS), and *tert*-butyldiphenyl silyl (TBDPS).

18. (original) The method of claim 15, wherein R^3 is a phosphite amide group.

19. (previously presented) The method of claim 18 wherein R^3 is -$P(R^6)$-NR^4R^5 wherein R^4 and R^5 are independently selected from the group consisting of -H, -(C_1-C_{10})-alkyl, -(C_2-C_{10})-alkenyl, and -(C_6-

C_{22})-aryl, and R^6 is selected from the group consisting of H, -(C_2-C_6)-alkenyloxy, -(C_2-C_6)-alkenyl, -(C_1-C_6)-alkyl, and -(C_1-C_6)-alkoxy, wherein each group contains a substituent selected from the group consisting of -halo, p-nitroaryloxy, and -cyano.

20. (original) The method of claim 19, wherein R^6 is a 2-cyanoethyloxy group.

21. (original) The method of claim 15 wherein L has the structure -C(O)-R when n=1, or =CH-NR^8R when n=0, wherein R is a residue of the protecting group and R^8 is selected from the group consisting of H and -(C_1-C_3)-alkyl.

22. (previously presented) The method of claim 15, wherein B is selected from the group consisting of adenine (A), guanine (G), cytosine (C), aza analogs of A, G, and C, deaza analogs of A, G, and C, combination aza and deaza analogs of A, G, and C and analogs thereof containing additional amino groups.

23-26 (canceled)